

Threading
Dislocation

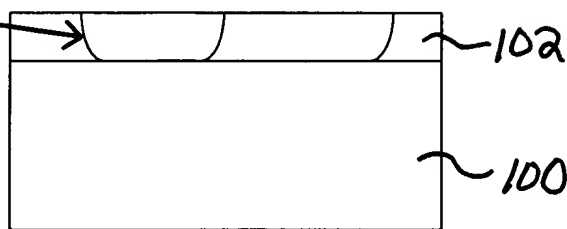


Figure 1A

1. Deposit lattice mismatched
layer at low T

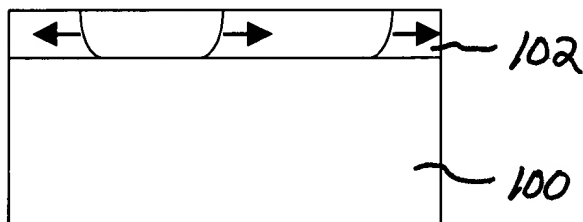
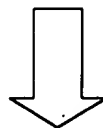
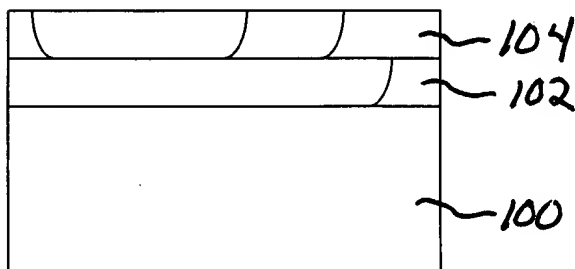
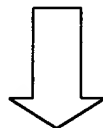


Figure 1B

2. Anneal at high T to increase
dislocation flow and reduce
dislocation density



4. Repeat anneal and
deposition until desired
structure is achieved

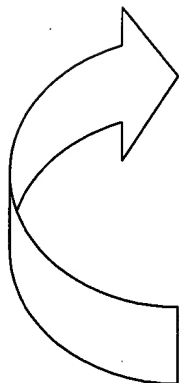


Figure 1C

3. Deposit subsequent layer with
increased lattice mismatch at low T

✓
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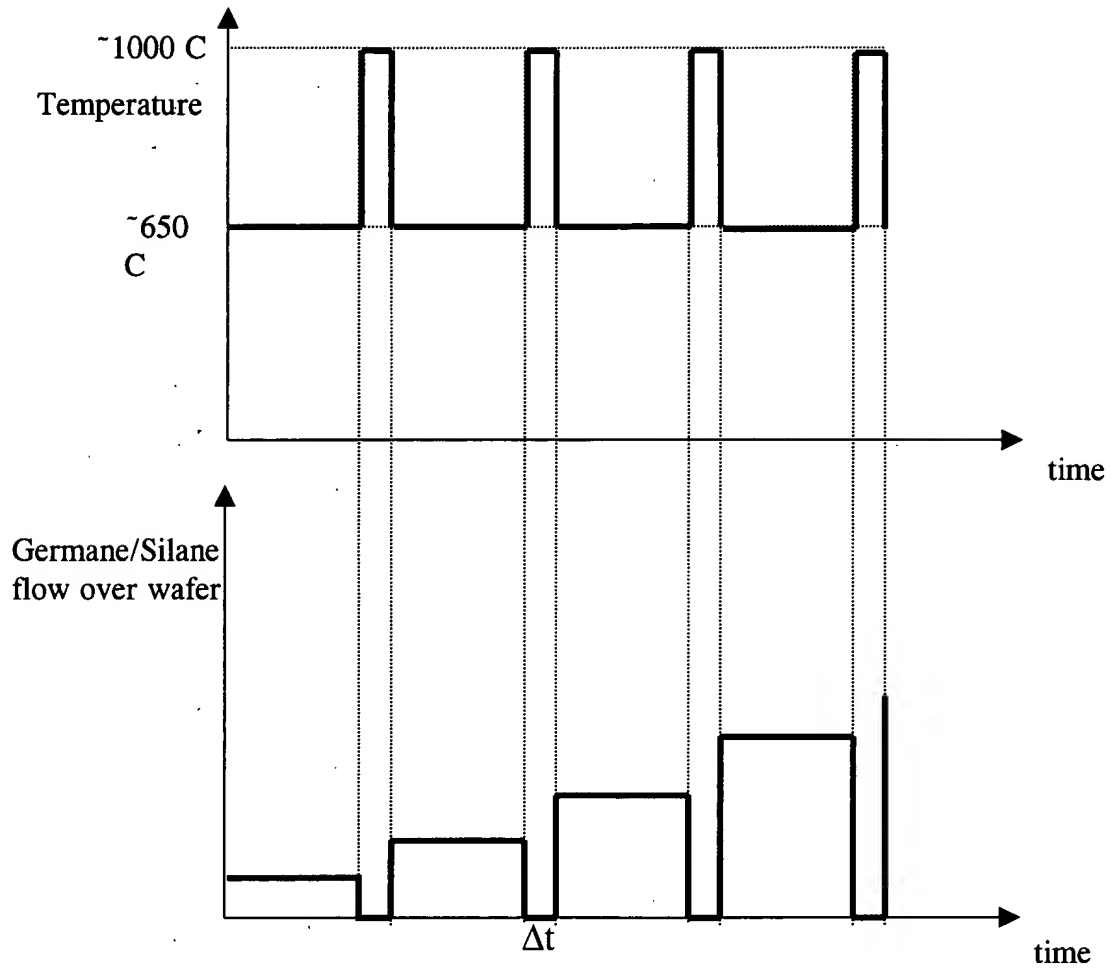


Figure 2

Glide Kinetics Series (30% Ge): Field TDD vs.
Growth T

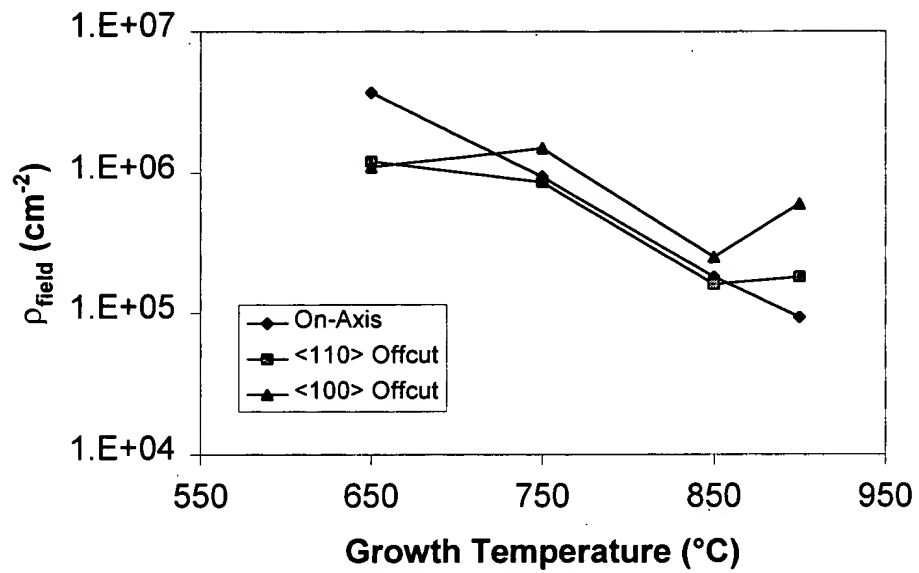


Figure 3

Change in Effective Strain to Fit Data

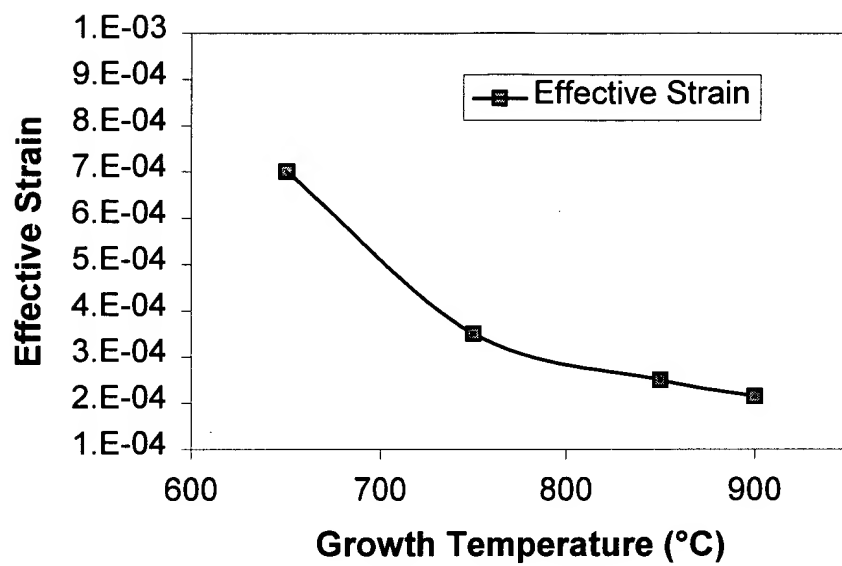


Figure 4

Sample	Total Threading Dislocation Density (#/cm ²)	Field Threading Dislocation Density (#/cm ²)
20% SiGe on Si with graded buffer as grown	1.36×10^6	1.31×10^6
20% SiGe on Si with graded buffer after a 5 min anneal at 1050°C	7.25×10^5	5.48×10^5

Figure 5

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